

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**ANIMAL MORTALITY FACILITY**

(No.)

**CODE NY316**

**DEFINITION**

An on-farm facility for the treatment or disposal of livestock and poultry carcasses.

catastrophic animal mortality; however, it does not apply to catastrophic mortality resulting from disease, as specified by the state veterinarian.

**PURPOSE**

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Decrease non-point source pollution of surface and groundwater resources
- Reduce the impact of odors that result from improperly handled animal mortality
- Decrease the likelihood of the spread of disease or other pathogens that result from the interaction of animal mortality and predators
- To provide contingencies for normal and catastrophic mortality events

**CRITERIA**

**General Criteria Applicable to All Purposes**

The facility shall be designed to handle normal mortality and/or catastrophic mortality.

The planning and design of animal mortality facilities or processes must conform to all federal, State and local laws, rules and regulations. This includes provisions for closing and/or removing the facility where required.

All structural components integral to animal mortality management shall meet the structural loads and design criteria as described in NRCS conservation practice standard 313, Waste Storage Facility, unless otherwise designated.

Direct surface runoff away from the facility. Direct any contaminated runoff from mortality facilities to an appropriate storage, vegetative filter area or other treatment facility for further management.

**Location.** The location shall minimize the impact of the facility on odor and other air quality issues affecting neighboring residences, as well as minimizing the impact of the facility on surface and ground water resources. In addition, the facility, where practical, shall be generally down gradient from a spring or well.

The animal mortality facility shall be located

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies where animal carcass treatment or disposal must be considered as a component of a waste management system for livestock or poultry operations. It applies where on-farm carcass treatment and disposal are permitted by federal, State, and local laws, rules, and regulations. It also applies where a waste management system plan as described in the National Engineering Handbook (NEH), Part 651, Agricultural Waste Management Field Handbook (AWMFH) has been developed that accounts for the end use of the product from the mortality facility. This practice includes disposal of both normal and

outside the 100-year floodplain; however if site restrictions require location within a floodplain, they shall be protected from inundation or damage from the 100-year 24 hour storm event.

The facility shall be located as close to the source of mortality as practical, considering bio-security issues and the need to keep the facility out of sight of the general public.

The location of the animal mortality facility shall be consistent with the overall site plan for the livestock or poultry operation.

**Seepage Control.** Where seepage from mortality facilities will create a potential water quality problem and it is deemed necessary to reduce seepage, use AWMFH, Appendix 10D, for clay liner design criteria, or other acceptable liner technology.

#### **Additional Criteria Applicable to All Purposes – Normal Mortality**

In the absence of actual on-farm mortality records, the following table lists average ranges of animal mortality, which should be used when choosing a method for disposal, and the planned capacity of that system.

Refer to Table 1, found on Page 3.

#### **Composters.**

**General.** Design of facilities for composting animal mortality shall conform to conservation practice standard 317, Composting Facility, or the guidance in National Engineering Handbook Part 637, Chapter 2 – Composting (NEH 637.0211, Dead Animal Composting).

#### **Freezers.**

**General.** Freezer units shall be of the chest type with a construction compatible with the mechanism to be used to empty the freezer. Provisions for protecting the freezer unit from precipitation and direct sun shall be made as deemed appropriate.

The freezer unit design, construction, power source, and unit installation shall be in accordance with manufacturer's recommendations. Freezers shall be constructed of durable material with a life expectancy compatible with other aspects of the waste management system. The freezer

container shall be leakproof to minimize odor and leachate pollution.

Where needed, the freezer will be placed on a pad of suitable strength to withstand loads imposed with vehicular traffic consistent with equipment used to load or remove the box or tray.

**Temperature.** The freezers shall be self-contained units designed to freeze animal carcasses before decomposition occurs. For best results, the temperature of the carcasses shall be maintained between 22<sup>o</sup> and 26<sup>o</sup> F.

**Capacity.** Freezer units shall be sized to accommodate the normal maximum volume of mortality to be expected in the interval between emptying. Volume calculations shall include the expected mortality rate of the animal, the period of time between emptying where mortality is given on a per day basis, the average weight of the animal between emptying, and a conversion factor for weight to volume. For broiler operations use a weight to volume conversion of a minimum of 45 pounds per cubic foot. Capacity calculations shall be supported by a removal schedule supplied by an integrator or approved vendor.

**Power Source.** An alternative source of power, where available, shall be used to maintain the integrity of the freezing process during power outages. Where an alternative power source will not be available, the operation and maintenance plan shall contain contingencies for disposal of the animal mortality.

#### **Burial Pit**

**General.** Mortality resulting from natural conditions such as temperature extremes shall be buried on-site or as otherwise directed by state and local regulatory agencies. Burial of mortality shall be timed to minimize the effects of mortality expansion during early stages of the decay process. Where possible and permitted by state law, mortality shall remain uncovered or lightly covered until bloating has occurred, or methods employed to reduce or eliminate bloating. Topsoil shall be retained to re-grade the disposal site after the ground has settled as the decay process is completed. Stockpiled soil shall be no closer than 20 feet from the edge of the burial pit.

**Table 1. Poultry and Livestock Mortality Rates****Poultry**

Poultry Type	Average Weight, lbs.	Mortality Rate, %	Flock Life, days	Design Weight, lbs.
Broiler	4.2	4.5-5	42-49	4.5
Layers	4.5	14	440	4.5
Breeding Hens	7-8	10-12	440	8
Turkey, Females	14	5-6	95	14
Turkey, Males	24	9	112	24

**Swine**

Growth	Average Weight, lbs.	Mortality Rate, %			Design Weight, lbs.
		Low	Average	High	
Birth to Weaning	6	< 10	10-12	> 12	10
Nursery	24	< 2	2-4	> 4	35
Growing-Finishing	140	< 2	2-4	> 4	210
Breeding Herd	350	< 2	2-5	> 5	350

**Cattle/Horses**

Growth Stage	Average Weight, lbs.	Mortality Rate, %			Design Weight, lbs.
		Low	Average	High	
Birth	70-130	< 8	8-10	> 10	130
Weanling	600	< 2	2-3	> 3	600
Yearling	900	< 1	1	> 1	900
Mature	1,400	< 0.5	0.5-1	> 1	1,400

**Sheep/Goats**

Growth Stage	Average Weight, lbs.	Mortality Rate, %			Design Weight, lbs.
		Low	Average	High	
Birth	8	< 8	8-10	> 10	10
Lambs	50-80	< 4	4-6	> 6	80
Mature	170	< 2	3-5	> 8	170

Source: Ohio's Livestock and Poultry Mortality Composting Manual, 1999.

**Size and Capacity.** Pits shall be sized to accommodate mortality using appropriate weight to volume conversions. Capacity shall be in accordance with criteria acceptable to state and local regulatory agencies. The burial pit shall be a minimum of 4 feet wide with length necessary to accommodate mortality. Depth shall accommodate a minimum of 4 feet of cover over the mortality. Pit bottoms shall be relatively level. Lengths may be limited by soil suitability and slope. If more than one pit is required, they shall be separated by a minimum of three feet of undisturbed or compacted soil. The burial site shall be finish graded to slightly above natural ground elevation to accommodate settling.

**Structural Loading and Design.** Vehicular traffic shall not be allowed within four feet of the pit edge.

To protect against trench cave-in or failure, maintain side slopes at 1 Horizontal to 1 vertical (1:1), or flatter, if pits are to remain open. To reduce injury potential, prohibit personnel entry into open pits.

#### **Incinerators.**

**General.** Incinerators shall be dual burning Type 4 (human and animal remains) approved for use within the state.

**Capacity.** Minimum incinerator capacity shall be based on the average daily weight of animal mortality and the length of time the incinerator will be operated each day.

**Location.** The incinerator shall be located a minimum of 20 feet from any structure. The incinerator shall be placed on a concrete pad with the fuel source as distant as practical. If the incinerator is covered with a roof, at least six inches are required between the incinerator chimney and any combustible roof parts.

#### **Additional Criteria Applicable to All Purposes – Catastrophic Mortality**

**General.** Processes addressed by this standard shall be limited to burial and composting. In the event of a catastrophic mortality, health and environmental officials shall be informed.

**Location.** The site shall be located as far away from neighboring dwellings and the

poultry or livestock operation as conditions permit. Sites shall be limited to those with restricted percolation and a minimum of two feet between the bottom of the windrow or trench and the seasonal high water table unless special design features are incorporated that address seepage rates and non-encroachment of contaminants into the water table. Use AWMFH Appendix 10D for selection of sites where seepage will be restricted with normal construction techniques.

#### **Composting**

**General.** Catastrophic mortality composting shall be in either passive piles or windrows as described in National Engineering Handbook Part 637, Chapter 2 – Composting (NEH 637.0210 and NEH 637.0211).

Composting mortality shall be protected from precipitation as necessary, or provisions made for collecting contaminated runoff. Static piles or windrows covered with sawdust, finished compost, or other absorptive benign material will not need further protection.

#### **CONSIDERATIONS**

Major considerations in planning animal mortality management are:

- Available equipment at the operation,
- The management capabilities of the operator,
- The degree of pollution control required by state and local agencies,
- The economics of the available alternatives, and
- Potential effect on neighbors.

Consideration should be given to prevailing wind direction and neighbors when siting animal mortality disposal facilities. Consider a minimum of 900 feet separating the facility from the nearest neighboring residence, and siting the facility 200 feet from a well, spring, or water course.

Runoff from the livestock or poultry facility, or from outside areas should be diverted away from the animal mortality disposal facility.

All composting will be hindered if the carcasses are allowed to freeze. Carcasses

should be kept in a dry, non-freezing environment until added to the compost mix.

Poultry operations often experience higher rates of mortality as the birds reach maturity. The capacity of incinerators should be sized to insure the mortality of the large birds that could be handled within the time frame allowed for incineration.

An alternative to prevent bloating of catastrophic mortality die off could include opening animal thoracic and abdominal cavities and viscera prior to placing required cover.

Incineration produces varying quantities of ash that will need to be properly handled.

Vegetative screens and topography can be used to shield the animal disposal facility from public view, and to minimize visual impact. The use of vegetative screening can also help to reduce noise, odors, and may help to sequester nutrients around the perimeter of the facility through nutrient uptake by the plants.

State requirements for record keeping vary. Items such as burial site location, type and quantity of mortality, burial date, and other pertinent details should be noted at the time of burial.

Safety devices such as fencing, warning signs, and freezer locks may be necessary at certain sites.

Bio-security concerns should be addressed in all aspects of planning, installation, and operation and maintenance of an Animal Mortality Facility.

Ground disturbing activities such as excavation and site preparation for disposal facilities have the potential to affect significant cultural resources.

## **OPERATION AND MAINTENANCE**

An operation and maintenance plan applicable to this practice that includes, but is not limited to, the items listed below, will be developed with the operator. The plan will become a part of the overall waste management system plan. The requirements in the individual operation and maintenance plan shall be consistent with

the practice purposes, intended life, and design criteria. Safety considerations shall be prominently displayed in the plan.

Operators should maintain a list of current phone numbers for state and local officials to aid in notification if disease-related catastrophic mortality occurs.

### ***Normal Mortality***

Animal mortality facilities will normally be operated or used on a daily basis. At each operation or use, the facility shall be inspected to note any maintenance needs or indicators of operation problems.

### ***Catastrophic Mortality***

Possible locations for catastrophic animal mortality facilities shall be located during the planning process to be operated as needed.

Burial of catastrophic mortality shall be timed to minimize the effects of mortality expansion during early stages of the decay process. Where possible and permitted by state law, mortality shall remain uncovered or lightly covered until bloating has occurred. Some topsoil shall be retained to re-grade the disposal site after the ground has settled as the decay process is largely completed.

Where composting is used for catastrophic mortality disposal, the operation and maintenance plan shall identify the most likely compost medium, possible compost recipes, operational information, and equipment that will need to be readily available.

## **PLANS AND SPECIFICATIONS**

Plans and specifications for animal mortality facilities shall be in keeping with this standard and shall describe the requirements for applying this practice to achieve its intended purpose.

## **REFERENCES**

Agricultural Waste Management Field Handbook (AWMFH)

National Engineering Handbook, Part 637, Chapter 2, Composting

NRCS GM 420 Part 401 – Cultural Resources,  
NRCS National Handbook of Conservation  
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